

KOOTENAI RIVER FISHERIES INVESTIGATIONS

8806500

SHORT DESCRIPTION:

Determine status of Kootenai River white sturgeon (ESA), burbot (a genetically distinct stock), whitefish, and rainbow stocks in the Kootenai River and effects of water fluctuations on these stocks. Monitor and Evaluate experimental flows for white sturgeon spawning and rearing. Determine important habitat characteristics of white sturgeon spawning. Evaluate hatchery releases of white sturgeon from the Kootenai Indian Tribal hatchery. Study tagged sturgeon in Kootenay Lake by telemetry and investigate spawning in other tributaries to Kootenay Lake. Test the hypothesis water management during winter for power and flood control inhibits burbot migrations to spawning tributaries in Idaho. Determine if juvenile rainbow trout are fully seeded in tributaries and identify limiting factors to outmigrants to Kootenai river and factors effecting survival to adult. Identify important nursery tributaries for rainbow trout recruits and potential for habitat improvement.

SPONSOR/CONTRACTOR: IDFG

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SUB-CONTRACTORS:

British Columbia Ministry of Environment - Fisheries U S
Geological Survey

GOALS

GENERAL:

Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations, Provides needed habitat protection, Adaptive management (research or M&E), Program coordination or planning

RESIDENT FISH:

Habitat, Production, O&M, Research, M&E

NPPC PROGRAM MEASURE:

10.4B;.1;.2;.3;.4;.5 and 10.6C.1

RELATION TO MEASURE:

The Kootenai River Fisheries Investigation (KRFI) is comprised of several companion studies with inter agency cooperation with other related studies. The KRFI has target white sturgeon (ESA listed), burbot, whitefish, and rainbow trout in the Kootenai River and tributaries to determine factors limiting these depressed populations and improving habitat. Tasks outlined in the KRFI Work Plan also include assisting the Kootenai Tribe of Idaho with brood fish collections, Monitoring and Evaluation of sturgeon spawning and rearing, and evaluation of hatchery stockings of sturgeon from the tribal hatchery. In addition is the separate project of Monitoring and Evaluation (M&E) flows provided by the US Army Corps of Engineers for sturgeon spawning and rearing. M&E is a cooperative study by IDFG, Kootenai Tribe of Idaho, and the Montana Department of Fis

BIOLOGICAL OPINION ID:

USFWS BO Incidental Take

TARGET STOCK

Whitefish
Rainbow trout
Burbot (genetically distinct stock)
White sturgeon

LIFE STAGE

MGMT CODE (see below)

N,W
N,W
N,W
I,S,W

AFFECTED STOCK

West Slope Cutthroat trout
Bull trout

BENEFIT OR DETRIMENT

Beneficial
Beneficial

BACKGROUND

STREAM AREA AFFECTED

LAND AREA INFORMATION

Stream name:

Kootenai River and all tributaries in Idaho and Goat R and Kootenay Lake in British Columbia

Stream miles affected:

171 miles

Hydro project mitigated:

Libby Dam, Libby, Montana

Project is an office site only**Subbasin:**

Kootenai River Basin

Land ownership:

Both

Acres affected:

8,769,730

Habitat types:

Kootenai River drainage, large mainstem river, side channels, backwater sloughs, high gradient and channelized tributaries.

HISTORY:

Kootenai River Fisheries Investigations (Project 88-65) began September 1, 1988. The project includes the study of white sturgeon and burbot/whitefish/rainbow trout in the Kootenai River downriver of Libby Dam. Through a cooperative effort, the Idaho Department of Fish and Game and the Kootenai Tribe of Idaho completed an assessment of the status of white sturgeon in the Kootenai River, successfully cultured sturgeon from the endemic stock, and stocked age 1 and age 2 sturgeon into the Kootenai River (Apperson 1992; Apperson and Anders 1990 and 1991; Siple and Aitken 1992). Recruitment of wild sturgeon to the Kootenai population has been very limited since Libby began operation in 1974. Regulated flow from the dam has been identified as the primary factor limiting sturgeon spawning and early rearing. On June 11, 1992, this population was petitioned for protection under the Endangered Species Act and listed as endangered by the FWS on October 6, 1994. The first experimental spawning flows occurred May-June 1991, 1993, 1994 and 1995. Declines observed in populations of burbot, kokanee, whitefish, and Gerrard rainbow trout have been attributed to regulated flows from Libby Dam warmer winter temperature and entrapment of nutrients within the reservoir. Nutrient dynamics work has been subcontracted to ISU. Telemetry of tagged sturgeon in Kootenay Lake has been subcontracted to BC.

BIOLOGICAL RESULTS ACHIEVED:

Possibly, six wild juveniles have been caught from the 1991 year class and two from the 1992. Wild sturgeon have been found from other years but in very low numbers (1-5/year class). This indicates that sturgeon are being recruited to the system after Libby Dam was constructed and began operation. However, the number of sturgeon being found does not represent a healthy population. Burbot spawning migration in 1994-95 and 1996-1997 was impeded by power production and flood control by Libby Dam. Recent mitochondrial DNA analysis indicates the burbot in the Kootenai River are comprised of at least two genetically distinct stocks of burbot that have demonstrated different life histories. One stock is found in the Kootenai River of Idaho and B.C. and Kootenay Lake, B.C. while the other is in the upper Kootenai River of Montana.

PROJECT REPORTS AND PAPERS:

Annual Reports: Kootenai River White Sturgeon Investigations and Experimental Culture - FY 1989, 1990, 1991, 1992. Kootenai River White Sturgeon Investigations - FY 1993 and FY 1994. Kootenai River White Sturgeon Investigations: Stock Status of Burbot and Rainbow Trout and Fisheries Inventory - FY 1993, FY1994, FY1995, FY1996. Natural Spawning of White Sturgeon (*Acipenser transmontanus*) in the Kootenai River, Idaho, 1994. Preliminary Report of Research, KTOI, IDFG and MDFWP. Kootenai River White Sturgeon Investigations - FY 1995. Draft Kootenai River White Sturgeon Investigations - FY 1996.

ADAPTIVE MANAGEMENT IMPLICATIONS:

We will be able to determine the minimum augmented flow to provide a self sustained white sturgeon population and remove it from the Endangered Species list. Knowledge of the maximum tolerable flow and duration will provide information necessary to allow spawning migrations of burbot to enter Idaho and provide a sustained fishery. Modification of power peaking at critical periods will ensure adequate survival of rainbow trout recruits and improve the fishery. Knowledge of improving productivity will ensure improved growth rates and stocks of all species including whitefish (whitefish are not only important as a sportfish but they are an indicator species).

PURPOSE AND METHODS**SPECIFIC MEASUREABLE OBJECTIVES:**

FY 97: (1) Determine the numerical population status and growth of adult white sturgeon. (2) Determine the minimum flow that will provide spawning and rearing habitat in the Kootenai River. Determine response of spawning white sturgeon during experimental discharges from Libby Dam by tracking tagged adults. Habitat physical parameters used by spawners will be measured during the migration and spawning periods. Measure egg deposition and physical parameters at each site. Measure larval abundance during flows. Measure fry and yearling abundance as related to flows. Habitat for sturgeon life histories will be compared to established habitat suitability curves for Lower Columbia River white sturgeon. (3) Determine the effect of sand coating on development and survival of white sturgeon eggs. (4) Determine if food is a limiting factor to growth and survival of juvenile white sturgeon. Capture and sacrifice 25 hatchery juvenile sturgeon to identify food items and other parameters such as length, weight, and fin rays. (5) Determine the concentration level of selected toxicants in the reproductive products of sturgeon and if it is at a tolerable level. (6) With Acoustic Doppler Current Profiling identify the current characteristics of spawning locations for white sturgeon (7) Determine if high flows created by power peaking /control during the winter block or delay burbot migration. Burbot will be captured, tagged and monitored throughout the year. Velocities will be measured at four randomly selected areas within three main river reaches. Burbot reproductive status, spawning, habitat use and periodicity of spawning will be assessed by implanting sonic tags in adults. Telemetry will occur year round. Temperature will be recorded in tributary streams and the Kootenai River on a daily basis. (8) Identify methods to effectively sample larval burbot and white sturgeon. Various gear types (mid-water trawl, bottom trawl and experimental sled) will be tried to capture larval burbot and sturgeon. (9) Identify factors limiting rainbow trout survival and or recruitment in the Kootenai River. Conduct a literature review and confer with other biologists to assess whether or not systems comparable to the Kootenai River have significant mainstem spawning and early rearing. Conduct an initial stock assessment to determine age structure and abundance of juvenile rainbow trout in the main Kootenai River. Determine the extent of rainbow trout spawning activity in the main river. Redds identified in the mainstem will be marked and monitored for desiccation and/or scouring. Determine the size and age of juvenile rainbow trout immigrating from the tributaries to the main river. Tag adult trout in tributary streams with radio transmitters and follow their movements and responses to water management. (9) Assist the Kootenai Tribe with an Adaptive Ecosystem Assessment Workshop (AEA) to help formulate long range management goals for the Kootenai River ecosystem.

CRITICAL UNCERTAINTIES:

Endangered Species Act is abandoned by Congress and Kootenai River white sturgeon goes extinct. Peer reviewed ms of Burbot genetics is rejected and distinction of this unique stock goes unnoted and stock is driven to extinction.

BIOLOGICAL NEED:

The Kootenai River white sturgeon is an Endangered Species. It once provided a popular sport fishery for Native Americans, residents, and tourists. Since construction of Libby Dam recruitment has been extremely limited. Water management and loss of nutrients because of Libby Dam appear to be the most limiting factors to sturgeon, growth, reproduction, and egg and larval survival. Experimental water management has provided some spawning conditions for sturgeon but the extent of survival of eggs and larvae is unknown. Burbot provided a popular consumptive winter sport and commercial fishery for Native Americans, residents and tourists. Burbot densities in Idaho are extremely low. Burbot in the Kootenai River in Idaho and B.C. are genetically distinct from burbot in Montana. Burbot are weak swimmers. Preliminary information indicates these winter spawning fish are inhibited by power production/flood control from reaching traditional spawning tributaries in Idaho. Thus recruitment is nearly non existent. Rainbow trout is the most popular sport fish in the Kootenai River but the harvest is much lower than that of other rivers in Idaho. Preliminary information indicates the nursery tributary streams are well seeded but in river inventories indicate low numbers of trout and very poor recruitment of young fish. Whitefish are the most abundant sportfish in the Kootenai River in Idaho. Whitefish densities, recruitment of young, and growth rate is lower than pre Libby days. Loss of nutrients appears to have effected primary and secondary productivity and abundance of insect eating fish including whitefish. After the Adaptive Ecosystem Assessment workshop the whitefish will once again be used as an indicator species for the AEA process of improving productivity and growth of fish.

HYPOTHESIS TO BE TESTED:

(1) Augmented discharge from Libby Dam will stimulate white sturgeon migration, and enhance survival of eggs and larval sturgeon. (2) Minimum winter flows will allow burbot to migrate and spawn in traditional Idaho tributaries. (3) Enhancement of phosphorous and nitrate at key locations, time, and amounts will improve primary and secondary production. This will enhance survival, abundance and growth of sport fish.

ALTERNATIVE APPROACHES:

None

JUSTIFICATION FOR PLANNING:

N/A

METHODS:

White sturgeon studies; capture adult white sturgeon w/set lines (up to 50) white sturgeon respond to augmented flow - telemetry of 30-50 adult sturgeon (sonic and radio), documentation of sturgeon spawning by deploying 80 egg mats at various locations. Sample larval sturgeon with shrimp trawl, meter nets or midwater trawl, sample up to 50 juvenile sturgeon w/small mesh gill nets and sacrifice 25 hatchery juveniles for food habit analysis to determine if food is a limiting factor. Sample reproductive tissues to determine if toxic substance residues are limiting egg survival. Burbot studies; sample burbot w/baited hoop nets in lower river, implant sonic transmitters. Use Fisher Exact Test to determine affect of power production/flood control on burbot migration. Sample burbot eggs with drift nets to verify burbot spawning and locations. Rainbow trout, visual inspection for trout redds, sample adults and juveniles with backpack electroshocker, use ANOVA to determine differences in outmigrants from tributaries, sample with drift traps. Use the AEA process to formulate long range management plan to improve growth, productivity, and survival of target fish.

PLANNED ACTIVITIES

SCHEDULE:

<u>Planning Phase</u>	<u>Start</u> January 1, 1997	<u>End</u> December 31, 1997	<u>Subcontractor</u>
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Task (1) Project planning for all field activities was completed the previous November /1996 for Fiscal Year 1997. (2) Planning flows for white sturgeon in 1997 will occur in January - March/1997 with forecasting of the projected water year and available water in Kootenai as late as April 1997. This is done by the Kootenai River White Sturgeon Recovery Team and the Technical Management Team (comprised of USACE, NMFS,BPA, and USFWS). (3) Plans and coordination for experimental low flows for burbot for winter 1997/1998 will be requested August 1997.

<u>Implementation Phase</u>	<u>Start</u> January 1, 1997	<u>End</u> Dec. 1, 1997	<u>Subcontractor</u> None
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Task (1) Sample burbot, implant transmitters and continue telemetry, evaluate spawning migration and minimum winter flow - Winter. (2) Sample burbot eggs, larval and juvenile burbot - Winter - Spring. (3) Attach transmitters to prospective white sturgeon spawners and track w/telemetry - Spring. (4) Sample sturgeon eggs and larvae - Spring - Summer. (5) Sample age-0 and juvenile sturgeon - Summer to Autumn. (6) Track juvenile sturgeon and collect stomach samples from juvenile hatchery sturgeon. (7) Laboratory work, age analysis, food habit and habitat analysis, report writing and data analysis - Autumn - Winter. (8) Rainbow trout literature review - Winter. (9) Spawner survey - Winter. (10) Redd monitoring - Winter - Spring. (11) Stock assessment and outmigrant netting - Spring - Summer. (12) Lab and data analysis and report writing - Autumn - Winter.

PROJECT COMPLETION DATE:

December 31, 2017

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

Release of hatchery white sturgeon dilutes the unique gene pool and population is threatened because of unfit and poor genetic characteristics of hatchery fish. Hatchery releases are beyond carrying capacity and competition with wild fish stunts growth of both and population is unfit.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

Modified management of water from Libby Dam will allow spawning and recruitment of white sturgeon and burbot. White sturgeon will be removed from Endangered Species lists. White sturgeon and burbot stocks will be self sustaining and fisheries

will be reopened. Rainbow trout stocks will improve fishing and angler use of the Kootenai River will increase. Addition of nutrients will improve survival, abundance, and growth of sport fish while trophic structure improves.

Present utilization and conservation potential of target population or area:

At the present time the angler and recreational use of the Kootenai River is the lowest of north Idaho rivers or streams. This is primarily due to the fact catch success of rainbow trout and whitefish is among the lowest in the state and fishing for white sturgeon and burbot is closed. These attributes can all change with the improvements in the fisheries and recovery of endangered populations to self sustained fisheries. An improved and restored fishery will also improve the local economy and the quality of life.

Assumed historic status of utilization and conservation potential:

There are no document pre dam angling records for the Kootenai River but white sturgeon provided an important tribal and angler fishery. The tribal importance was not necessarily for consumption but of ceremonial value. The sport and commercial harvest of burbot may have been about 55,000 fish/year. The winter burbot fishery was an important social and angling event. Rainbow trout and whitefish were also sought after by many fly local and non resident fly fishermen.

Long term expected utilization and conservation potential for target population or habitat:

Recovery of the Kootenai River white sturgeon will be important to delisting this species. If the population is restored a catch and release fishery may be opened. Burbot in Idaho are found only in the Kootenai River, this species is currently listed as a species of special concern and a recovered population could delist this species and open the fishery to controlled harvest. Restored growth, survival of rainbow trout and whitefish will improve catch success of these species.

Contribution toward long-term goal:

It will provide management information and direction to recovery of target populations including white sturgeon, burbot, whitefish, and rainbow trout. These studies will also provide invaluable information to the recovery and management of other related species.

Indirect biological or environmental changes:

Work with landowners of tributary nursery streams could provide a showcase of successful habitat enhance. This would go far in improving habitat restoration to streams on private property through cooperative projects with state or federal agencies.

Physical products:

To date about 1,400 white sturgeon have been tagged of which about 125 have been fitted with sonic or radio transmitters. Only 73 burbot have been tagged but 32 have been surgically implanted with sonic transmitters. Thirty - two rainbow trout have been tagged and 10 surgically implanted with radio transmitters.

Environmental attributes affected by the project:

Land owners of some agricultural ground have reported increased pumping costs due to more normal spring time flows for white sturgeon. Higher spring time flows have reduced water temperatures in the Kootenai River during spring by about 2o C. The higher spring time flows also provide more zooplankton to the river but reduces biomass in the reservoir.

Changes assumed or expected for affected environmental attributes:

The above mentioned factors would become common spring time events.

Measure of attribute changes:

N/A

Assessment of effects on project outcomes of critical uncertainty:

The Kootenai River White Sturgeon Recovery Team has actively sought the input from the Boundary County Extension Office in regard to agricultural issues and impacts. In addition the USACE has been active with the agricultural community in response to their direct concerns.

Information products:

There are three Annual Reports completed each year as well as five to ten news releases, two to three radio programs describing these studies. Two publications for peer reviewed journals are in progress and one is in print. Popular articles for conservation magazines are prepared annually. About eight oral presentations to lay and scientific organizations are also delivered each year.

Coordination outcomes:

There are several groups comprised of members from all federal, tribal, state, and provincial agencies with a vested interest in the Kootenai River system as well as a group comprised of members from the previous sectors and the public. These primary groups are the Kootenai River White Sturgeon Recovery Team charged with the planning of objectives and tasks to recover white sturgeon but also other target species noted in this document as well as the ecosystem. The Kootenai River Ecosystem Steering Committee oversees, coordinates, oversees, many of the planned activities of agencies charged with the recovery of all target species and the ecosystem. This group often takes input from local government and the public. The Kootenai River Network coordinates efforts between the public, private and government sectors including grass roots studies and grants. All of these groups interact and coordinate activities to maintain focus and eliminate redundancy. Regularly scheduled meetings are held by all are often open to the public, and minutes are prepared as well as the upcoming agenda.

One factor limiting spawning and recruitment of white sturgeon is the lack of adequate discharge during spawning season. Other factors might be loss of habitat and reduced productivity. Preliminary work indicates contaminant levels are lower than those found in the Lower Columbia River sturgeon eggs and tissue. Movements of tagged fish in response to flows has been mapped (1990, 1991, 1992, 1993, 1994 and 1995). Natural sturgeon spawning has been observed by collection of eggs in 1991 (13), 1993 (3), 1994 (213) and 1995 (163). Sturgeon spawning occurred in the reach near Bonners Ferry (1991, 1993) and between Myrtle Creek and Shorty's Island (1994, 1995, 1996). A better understanding of the requirements necessary for spawning and recruitment of white sturgeon has been demonstrated. Burbot population is very depressed, only 17 fish were found in 1993 and eight in 1994. Information continues to be gathered on limiting factors affecting burbot reproduction and survival in the Kootenai River. Kootenai River below Libby Dam is nutrient limited. Nitrogen and phosphorus are very scarce in the river below Bonners Ferry. The selective withdrawal system is not a feasible solution to increase nutrient productivity in the Kootenai River below Libby Dam. Prospects of adding nutrients to the system are being investigated. Fy 97: (1) Determine response of spawning white sturgeon in relation to flows provided by Libby Dam. (2) Measure egg deposition and fry and yearling abundance as related to flows. (3) Quantify habitat for sturgeon spawning and early rearing life stages. (4) Monitor, track and capture juvenile sturgeon in a closed lake system and/or Kootenai River. (5) Describe dynamics of nutrient cycling, determine factors limiting primary and secondary productivity and recommend alternatives to optimize productivity for support of sport fisheries. (6) Sample burbot from the Montana-Idaho border to the south arm of Kootenay Lake. (7) Assess burbot reproductive status, spawning success, habitat use and spawning periodicity by implanting sonic tags in adults and telemetry of tagged adults. (8) IFIM data collected by Montana will be used to define habitat availability for some of the life stages of burbot. (9) Determine the feasibility of sampling larval burbot and white sturgeon with a mid-water trawl and/or bottom trawl and/or experimental sled (10) Monitor abundance of zooplankton in the lower Kootenai River and south arm of Kootenay Lake. (11) Literature review for burbot published and unpublished reports.

MONITORING APPROACH

White sturgeon studies; capture adult white sturgeon w/set lines (up to 50) white sturgeon respond to augmented flow - telemetry of 30-50 adult sturgeon (sonic and radio), documentation of sturgeon spawning by deploying 80 egg mats at various locations. Sample larval sturgeon with shrimp trawl, meter nets or midwater trawl, sample up to 50 juvenile sturgeon w/small mesh gill nets and sacrifice 25 hatchery juveniles for food habit analysis. Burbot studies; sample burbot w/baited hoop nets in lower river, implant sonic transmitters. Use Fisher Exact Test to determine affect of Power Production on burbot migration. Sample burbot eggs with drift nets to verify burbot spawning and locations. Rainbow trout, visual inspection for trout redds, sample adults and juveniles with backpack electroshocker, use ANOVA to determine differences in outmigrants from tributaries, sample with drift traps. Findings from these tasks progressively add to the knowledge of fish and ecosystem mitigative needs and management.

Provisions to monitor population status or habitat quality:

Collecting permits and Section 10 Permits have been procured. A rough draft of the Kootenai River White Sturgeon Recovery Plan has been prepared and a final Recovery Plan will be ready by late summer 1997. This plan outlines not only the recovery needs that are to be followed for white sturgeon but also measures for the recovery of burbot, rainbow trout, kokanee, and whitefish. Also this has been an ongoing project and all studies have been in place for a minimum of four years. Thus, all necessary planning and needs are ready for the future. This includes incorporation of and meeting the needs of the Regional Fish Management Plan, the Statewide Fish Management Plan and Research Prioritization list.

Data analysis and evaluation:

Data will be compiled by project technicians and the principle investigator. Data analysis, data evaluation, and report preparation will be completed by the principle investigator using state of the art methodology. Findings will be reviewed by in house panel of experts and the research manager . Data and findings will be presented at a Project Review Meeting and scrutinized. Technical advise and input from outside will also be sought as it is necessary.

Information feed back to management decisions:

The information will be available in Annual and Completion Reports. In house meetings (Staff Meetings, Research Meetings, Project Review Meetings) will take place to implement findings as needed and be incorporated into management plans either Statewide or Regional or both. In addition findings will be shared through a number of media with various state, provincial, tribal, and federal agencies that have a vested interest in our findings and management recommendations.

Critical uncertainties affecting project's outcomes:

(a)Negotiations with conflicting interests through the Kootenai River White Sturgeon Recover Team, Kootenai River Ecosystem Steering Committee or by consultation with in house or outside experts to predict outcome from various options or adaptive management decisions. (b) None at this time.

EVALUATION

Recovery of target fish populations to fishable status. Delisting of the Kootenai River white sturgeon. Improved rainbow trout survival in nursery streams because of habitat enhancement.

Incorporating new information regarding uncertainties:

As new information or technologies become available they will be incorporated into the Annual Work Plans , Project Documents, or Annual Reports after going through the research review process or through the Kootenai River White Sturgeon Recovery Team.

Increasing public awareness of F&W activities:

The project has already increased the public's awareness of the regions efforts through the news media via news releases, radio spots, popular articles, and oral presentations to clubs, civic groups, sportsmans groups etc.

RELATIONSHIPS

RELATED BPA PROJECT

9404900 Kootenai River Ecosystem Improvements Study

9401200 Kootenai River White Sturgeon - M&E

8806400 Kootenai River White Sturgeon Study and Aquaculture

8346700 All work is performed in the Kootenai River system. Activities are coordinated through the Kootenai River Basin Steering Committee and Kootenai River White Sturgeon Recovery Team. Kootenai Kootenai River Burbot , Whitefish, and R

RELATIONSHIP

Cooperative assistance for task completion, equipment loans, technical advise and assistance

Cooperative assistance for task completion, equipment loans, technical advise and assistance

Cooperative assistance for task completion, equipment loans, technical advise and assistance

Cooperative assistance for task completion, equipment loans, technical advise and assistance

RELATED NON-BPA PROJECT

Bull trout surveys in Kootenai Drainage, USFWS

RELATIONSHIP

Technical advise and data sharing

OPPORTUNITIES FOR COOPERATION:

Kootenai Tribe of Idaho, IDFG, Montana Department of Fish, Wildlife, and Parks, and British Columbia Ministry of Environment- Fisheries are sponsoring a Adaptive Ecosystem Assessment Workshop to help form future management goals for

the Kootenai River ecosystem. Ongoing cooperation continues with the above mentioned agencies with white sturgeon research and propagation and burbot research with hypothesis testing of experimental flows.

COSTS AND FTE

1997 Planned: \$485,839

FUTURE FUNDING NEEDS:

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$559,020	10%		90%
1999	\$614,922	10%		90%
2000	\$676,414	10%		90%
2001	\$744,055	10%		90%
2002	\$811,020	10%		90%

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>OBLIGATED</u>
1988	\$139,174
1989	\$146,778
1990	\$148,595
1991	\$163,117
1992	\$86,386
1993	\$379,810
1994	\$444,492
1995	\$451,167
1996	\$503,494
1997	\$483,430

TOTAL: \$2,946,443

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

OTHER NON-FINANCIAL SUPPORTERS:

British Columbia Ministry of Natural Resources
 Kootenai Tribe of Idaho
 Montana Department of Fish , Wildlife and Parks
 U S Fish and Wildlife Service
 National Biological Service
 U S Army Corps of Engineers
 B C Hydro

LONGER TERM COSTS:

2003 \$884,018 annually plus inflation of 5- 10% annually. The Kootenai River White Sturgeon cannot be delisted for one complete generation or for about 20 years from the year of adoption of the recovery plan.
 These funds are primarily for implementation.

1997 OVERHEAD PERCENT: 19% of operating

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

A portion , personnel overhead is about 34%

CONTRACTOR FTE: Four permanent staff and five temporary staff (three month to eight month appointments)

SUBCONTRACTOR FTE: Two
